

Notice of Allowability

Application No.

10/705,677

Examiner

Son M. Tang

Applicant(s)

LIEFFORT ET AL.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 2/28/06.
2. ☒ The allowed claim(s) is/are 1,4-6,10,11,13-15,17 and 20-26.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date 3/10/06
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 5/12/06
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with **Kent J. Sieffert** on May 11, 2006, and authorized to charge any additional fees or credit any overpayment to deposit account number 50-1778.

The application has been amended as follows:

Listing of Claims:

Claim 1 (Currently Amended): A system, comprising:

a plurality of radio frequency (RF) antennas set up to provide one or more interrogation corridors; ~~and~~

a RF reader coupled to the plurality of antennas, the RF reader having a single transmitter/receiver (T/R) port that provides each of the antennas with RF power to produce interrogation fields within the interrogation corridors and delivers a combined input signal to the RF reader, wherein the RF reader generates a tag detection signal to indicate that at least one tag is present within the interrogation corridors;

a splitter that receives the RF power from the RF reader and delivers the RF power to each of the plurality of antennas in the form of a plurality of antenna drive signals, wherein the splitter receives one or more input signals from the plurality of antennas and combines the one or more tag signals to form the combined input signal;

a plurality of sensors to detect a patron within any of the interrogation corridors and generate a patron signal; and

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a controller that outputs an alarm signal upon receiving the tag detection signal and the patron signal within a time period.

Claims 2–3 (Canceled).

Claim 4 (Currently Amended): The system of claim 1 ~~3~~, wherein the plurality of antennas generate the input signals in response to at least one tag present within the interrogation fields.

Claim 5 (Currently Amended): The system of claim 1 ~~3~~ wherein the splitter combines the input signals such that a weak input signal from one of the antennas is combined with a weak input signal from at least one other antenna to increase the likelihood of detecting a tag in the corridor.

Claims 7–9 (Canceled).

Claim 10 (Currently Amended): The system of claim 1 ~~9~~, wherein the controller initiates a timer upon receiving either of the tag detection signal or the patron signal, and outputs the alarm signal prior to expiration of the timer upon receiving the other one of the tag detection signal or the patron signal ~~than was initially received~~.

Claim 13 (Currently Amended): ~~The system of claim 12,~~ A system, comprising:
a plurality of radio frequency (RF) antennas set up to provide one or more interrogation corridors;
an RF reader coupled to the plurality of antennas, the RF reader having a single transmitter/receiver (T/R) port that provides each of the antennas with RF power to produce interrogation fields within the interrogation corridors and delivers a combined input signal to the RF reader; and
a splitter that receives the RF power from the RF reader and delivers the RF power to each of the plurality of antennas in the form of a plurality of antenna drive signals, wherein the splitter receives one or more input signals from the plurality of antennas and combines the one or more tag signals to form the combined input signal,

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wherein the RF power delivered to each of the antennas has a 90° phase difference from the RF power delivered to a neighboring one of the antennas, and

wherein the 90° phase difference is provided using ¼ wavelength transmission lines.

Claim 15 (Currently Amended): A method, comprising:

producing a radio frequency (RF) output signal from a single transmitter/receiver (T/R) port of an RF reader;

splitting the RF output signal using a splitter into a plurality of antenna drive signals; and delivering the antenna drive signals to a plurality of antennas to produce interrogation fields within one or more interrogation corridors;

generating one or more input signals with the antennas in response to at least one tag present within the interrogation fields;

combining the input signals into a combined input signal using the splitter;

providing the combined input signal to the T/R port of the RF reader;

outputting the tag detection signal from the RF reader to a controller;

receiving a patron signal that indicates whether a patron is present within any of the interrogation corridors; and

outputting the alarm signal upon receiving the tag detection signal and the patron signal within a time period.

Claim 16 (Canceled).

Claim 17 (Currently Amended): The method of claim 15 ~~16~~, further comprising:

receiving the combined input signal with the T/R port; and

generating a tag detection signal from the combined input signal to indicate that at least one tag is present within the interrogation corridors.

Claims 18–19 (Canceled).

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Claim 20 (Currently Amended): The method of claim ~~15~~ 19, further comprising:

initiating a timer upon receiving either of the tag detection signal or the patron signal; and
outputting the alarm signal prior to expiration of the timer upon receiving the other one of
the tag detection signal or the patron signal ~~than was initially received~~.

Claim 24 (Currently Amended): ~~The method of claim 23,~~ A method comprising:

producing a radio frequency (RF) output signal from a single transmitter/receiver (T/R)
port of an RF reader;

splitting the RF output signal using a splitter into a plurality of antenna drive signals;
delivering the antenna drive signals to a plurality of antennas to produce interrogation
fields within one or more interrogation corridors;

generating one or more input signals with the antennas in response to at least one tag
present within the interrogation fields;

combining the input signals into a combined input signal using the splitter;
providing the combined input signal to the T/R port of the RF reader; and
delivering the plurality of antenna drive signals to the plurality of antennas wherein
~~delivering the plurality of antenna drive signals comprises delivering the signals using 1/4~~
wavelength transmission lines such that adjacent antennas are driven 90° out of phase.

Claim 25 (Currently Amended): An exit control system for detecting unauthorized removal of
articles from a protected area, the exit control system comprising:

a plurality of antennas oriented to provide interrogation corridors; ~~and~~
an RF reader coupled to the plurality of antennas, the RF reader having a single
transmitter/receiver (T/R) port that provides RF power to the antennas to produce interrogation
fields in the interrogation corridors and delivers a combined input signal to the RF reader,
wherein the RF reader interrogates the plurality of antennas using ~~a~~ the single T/R port to
transmit RF power to the antennas and to receive tag signals from the antennas at the single T/R

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port, wherein the reader generates a tag detection signal to indicate that at least one tag is present within the interrogation corridors;

a splitter that receives the RF power from the RF reader and delivers the RF power to each of the plurality of antennas in the form of a plurality of antenna drive signals, wherein the splitter receives one or more input signals from the plurality of antennas and combines the one or more tag signals to form the combined input signal;

a plurality of sensors to detect a patron within any of the interrogation corridors and generate a patron signal; and

a controller that outputs an alarm signal upon receiving the tag detection signal and the patron signal within a time period.

Claim 26 (Currently Amended): A computer-readable medium comprising instructions that cause a processor to:

output RF power from a reader using a splitter to a plurality of antennas through a single transmitter/receiver (T/R) port to produce interrogation fields within a plurality of interrogation corridors;

receive from the splitter via the T/R port a combined tag detection signal that indicates at least one tag is present within any of the plurality of interrogation corridors;

receive a patron signal that indicates at least one patron is present within any of the interrogation corridors; and

initiate a timer upon receiving either of the tag detection signal or the patron signal; and

output an alarm signal upon receiving the tag detection signal and the patron signal prior to expiration of the timer within a time period.

Claim 27 (Canceled).

REASONS FOR ALLOWANCE

The following is an examiner's statement of reasons for allowance: The present invention is directed to an radio frequency interrogation corridors system. Each independent claim identifies the uniquely distinct features "a plurality of RF antennas to detect tag signal, set up to provide one or more interrogation corridors, a RF reader having a single transmitter/receiver port that provides each of the antennas with RF power, and a splitter that delivers the RF power to each of the plurality of antennas and receives one or more input signals from the plurality of antennas and combines to form the combined input signal, and a plurality of sensors to detect a patron within any of the interrogation corridors and generate a patron signal, a controller that outputs an alarm signal upon receiving the tag detection signal and the patron signal within a time period" in combination with the manner claimed. The closest prior arts Kaltner US 5,126,749 and Maimann et al. US 4,635,041 disclose similarly inventions, but fail to teach the combination features above, therefore, either singularly or in combination, fail to anticipate or render the above underlined limitations obvious.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Son M. Tang whose telephone number is (571)272-2962. The examiner can normally be reached on 4/9 First Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Wu can be reached on (571)272-2964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Son Tang


BENJAMIN C. LEE
PRIMARY EXAMINER